

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 1. (Currently amended) A method for integrating changes occurring to an
2 object in a first object storage system with a second object storage system, the
3 method comprising steps of:
4 receiving from the first object storage system ~~notification~~ a notification of
5 an event relating to an object in the first object storage system;
6 setting up a representation of the object in the second object storage
7 system in response to the notification;
8 determining object changes made to the object in the first object storage
9 system using the representation in the second object storage system; ~~and~~
10 integrating the determined object changes with the representation in the
11 second storage system; and
12 maintaining consistency between the object in the second storage system
13 and the object in the first storage system.

1 2. (Original) A method for integrating object changes as in claim 1,
2 wherein the receiving step comprises the step of receiving a method call
3 associated with the event from the first object storage system.

1 3. (Original) A method for integrating object changes as in claim 1,
2 wherein the setting up step comprises the step of searching for a main copy of the
3 object in the second object storage system.

1 4. (Original) A method for integrating object changes as in claim 3,
2 wherein the setting up step further comprises the step of loading a main copy of
3 the object from a database into the second object storage system.

1 5. (Original) A method for integrating object changes as in claim 4,
2 wherein the integrating step further comprises the step of merging the object
3 changes into the main copy of the object contained in the second object storage
4 system.

1 6. (Original) A method for integrating object changes as in claim 1,
2 wherein the setting up step includes creating a working copy for tracking the
3 object changes and an original state copy for maintaining the original state of the
4 object; and
5 the determining step comprises the steps of:
6 modifying the working copy according to the object
7 changes in the first object storage system; and
8 comparing the working copy of the object and the original
9 state copy of the object to determine the differences between the
10 two copies.

1 7. (Original) A method for integrating object changes as in claim 6,
2 wherein the determining step further comprises the step of storing the object
3 changes in a change storage copy of the object in the second object storage
4 system.

1 8. (Original) A method for integrating object changes as in claim 1,
2 wherein the determining step further comprises the step of modifying the

3 representation in the second object storage system with the object changes in the
4 first storage system.

1 9. (Original) A method for integrating object changes as in claim 1,
2 wherein the integrating step comprises the step of committing the object changes
3 to a database.

1 10. (Original) A method for integrating object changes as in claim 1
2 further comprising the step of registering an event listener with the first object
3 storage system to obtain notification of events relating to an object in the first
4 object storage system.

1 11. (Original) A method for integrating object changes as in claim 1
2 further comprising steps of receiving a notification to undo actions in a transaction
3 prior to the notification, the notification being received up until after changes are
4 updated to a database; and undoing the actions.

1 12. (Currently amended) A method for integrating entity bean object
2 changes occurring to an entity bean object in a container with a persistence
3 manager, the container being capable of issuing notifications of events relating to
4 entity bean objects contained therein, the method comprising steps of:
5 | receiving from the container ~~notification~~ a notification of an event relating
6 | to an entity bean object in a container;
7 | setting up a copy of the entity bean object in the persistence manager in
8 | response to the container notification;
9 | determining object changes made to the entity bean object in the container
10 | using the representation in the persistence manager; ~~and~~

11 integrating the determined entity bean object changes with the copy in the
12 persistence manager; and
13 maintaining consistency between the copy of the entity bean object in the
14 persistence manager and the entity bean object in the container.

1 13. (Original) A method for integrating entity bean object changes as in
2 claim 12, wherein the container is an Enterprise JavaBeans (EJB) container.

1 14. (Original) A method for integrating entity bean object changes as in
2 claim 12, wherein the receiving step comprises the step of receiving a callback
3 method associated with the event from the container.

1 15. (Original) A method for integrating entity bean object changes as in
2 claim 12, wherein the setting up step comprises the step of searching for a main
3 copy of the entity bean object in the persistence manager.

1 16. (Original) A method for integrating entity bean object changes as in
2 claim 15, wherein the setting up step further comprises loading a main copy of the
3 object from a database into the persistence manager.

1 17. (Original) A method for integrating entity bean object changes as in
2 claim 16, wherein the integrating step further comprises the step of merging the
3 entity bean object changes into a main copy of the entity bean object in the
4 persistence manager.

1 18. (Original) A method for integrating entity bean object changes as in
2 claim 12, wherein the setting up step includes creating a working copy for
3 maintaining the original state of the entity bean object; and

4 the determining step comprises steps of:
5 modifying the working copy according to the entity bean
6 object changes in the container; and
7 comparing the working copy of the entity bean object and
8 the original state copy of the entity bean object to determine the
9 differences between two copies.

1 19. (Original) A method for integrating entity bean object changes as in
2 claim 18, wherein the determining step further comprises the step of storing the
3 entity bean object changes in a change story copy of the object in the persistence
4 manager.

1 20. (Original) A method for integrating entity bean object changes as in
2 claim 19, where in the integrating step comprises the step of committing the entity
3 bean object changes to a database.

1 21. (Original) A method for integrating entity bean object changes as in
2 claim 12, wherein the receiving step further comprises the step of registering a
3 synchronization event listener with a transaction service of the container.

1 22. (Original) A method for integrating entity bean object changes as in
2 claim 12, further comprising steps of:
3 Receiving a rollback notification to undo actions in a transaction prior to
4 the notification, the rollback notification being received up until after changes are
5 updated to a database; and
6 undoing the actions.

1 23. (Currently amended) An object change integration system for
2 integrating object changes occurring to an object in a first object storage system,
3 the object change integration system comprising:
4 a notification receiver for receiving from the first object system
5 ~~notification~~ a notification of an event relating an object in the first object storage
6 system;
7 a representation setter for setting up a representation of the object in the
8 second object storage system in response to the notification;
9 a change determination unit for determining object changes made to the
10 object in the first object storage system using the representation in the second
11 object storage system; ~~and~~
12 an ~~integration~~ object change integrator for integrating the determined
13 object changes with the representation in the second storage system; and
14 a consistency maintaining unit for maintaining consistence between the
15 object in the second storage system and the object in the first storage system.

1 24. (Original) An object change integration system as in claim 23, wherein
2 the representation setter has a search facility for searching for a main copy of the
3 object in the second object storage system.

1 25. (Original) An object change integration system as in claim 24, wherein
2 the representation setter has a load facility for loading a main copy of the object
3 from a database into the second object storage system.

1 26. (Original) An object change integration system as in claim 25, wherein
2 the integrator has a merge facility for merging the object changes into the main
3 copy of the object contained in the second object storage system.

1 27. (Original) An object change integration system as in claim 23, wherein
2 the representation setter has a copy creation facility for creating a working copy
3 for tracking the object changes and an original state copy for maintaining the
4 original state of the object; and
5 the change determination unit has:
6 an object modification facility for modifying the working
7 copy according to the object changes in the first object storage
8 system; and
9 an object comparison facility for comparing the working
10 copy of the object and the original state copy of the object to
11 determine the differences between the two copies.

1 28. (Original) An object change integration system as in claim 27, wherein
2 the change determination unit has a change storage facility for storing the object
3 changes in a change storage copy of the object in the second object storage
4 system.

1 29. (Original) An object change integration system as in claim 23, wherein
2 the integrator has a commit facility for committing the object changes to a
3 database.

1 30. (Original) An object change integration system as in claim 23 further
2 comprising:
3 a rollback notification unit for receiving notification to undo actions in a
4 transaction prior to the notification, the notification being received up until after
5 changes are updated to a database; and
6 a rollback provider for undoing the actions.

1 31. (Currently amended) An object change integration system for
2 integrating entity bean object changes occurring to an entity bean object in a
3 container with a persistence manager, the object change integration system
4 comprising;
5 a notification receiver for receiving from the container ~~notification~~ a
6 notification of an event relating to an entity bean object in the container;
7 a representation setter for setting up a copy of the entity bean object in the
8 persistence manager in response to the notification.
9 a change determination unit for determining object changes made to the
10 entity bean object in the container using the representation in the persistence
11 manager; and
12 an object change integrator for integrating the determined entity bean
13 changes with the copy in the persistence manager; and
14 a consistency maintaining unit for maintaining consistency between the
15 copy of the entity bean object in the persistence manager and the entity bean
16 object in the container.

1 32. (Original) An entity bean change integration system as in claim 31,
2 wherein the container is an Enterprise JavaBeans (EJB) container.

1 33. (Currently amended) A persistence manager connector for integrating
2 object changes occurring to an object in a first object storage system with a second
3 object storage system, the persistence manager connector comprising:
4 a notification receiver for receiving from the first object system
5 ~~notification~~ a notification of an event relating to an object in the first object
6 storage system;
7 a representation setting instructor for instructing the second object storage
8 system to set up a representation of the object in response to the notification;

9 a change determination instructor for instructing the second object storage
10 system to determine object changes made to the object in the first object storage
11 system using the representation in the second object storage system; and
12 an integration instructor for instructing the second storage unit to integrate
13 the determined object changes with the representation in the second storage
14 system;
15 wherein the persistence manager connector integrates the determined
16 object changes into the second storage system; and
17 a consistency maintaining unit for maintaining consistency between the
18 object in the second storage system and the object in the first storage system.

1 34. (Original) A persistence manager connector as in claim 33, wherein the
2 representation setter instructor has a search facility for searching for a main copy
3 of the object in the second object storage system.

1 35. (Original) A persistence manager connector as in claim 34, wherein the
2 representation setter instructor has a load instructor for instructing the second
3 object storage system to load a main copy of the object from a database into the
4 second object storage system.

1 36. (Original) A persistence manager connector as in claim 35, wherein the
2 integrator instructor has a merge instructor for instructing the second object
3 storage facility to merge the object changes into the main copy of the object
4 contained in the second object storage system.

1 37. (Original) A persistence manager connector as in claim 33, wherein the
2 representation setter instructor has a copy creation instructor for instructing the
3 second object storage facility to create a working copy for tracking the object

4 changes and an original state copy for maintaining the original state of the object;
5 and
6 an object modification instructor for modifying the working copy
7 according to the object changes in the first object storage system; and
8 an object comparison instructor for instructing the second object storage
9 facility to compare the working copy of the object and the original state copy of
10 the object to determine the differences between the two copies.

1 38. (Original) A persistence manager connector as in claim 37, wherein the
2 change determination instructor has a change storage instructor for instructing the
3 second object storage facility to store the object changes in change storage copy of
4 the object in the second object storage system.

1 39. (Original) A persistence manager connector as in claim 33, wherein the
2 integrator instructor has a commit instructor for instructing the second object
3 storage facility to commit the object changes to a database.

1 40. (Original) A persistence manager connector as in claim 33 further
2 comprising:
3 a rollback notification unit for receiving notification to undo actions in a
4 transaction prior to the notification, the notification being received up until after
5 changes are updated to a database; and
6 a rollback instructor for instructing the second object storage system to
7 undo the actions.

1 41. (Currently amended) A persistence manager connector for integrating
2 entity bean object changes occurring to an entity bean object in a container with a
3 persistence manager, the persistence manager comprising:

4 a notification receiver for receiving from the container ~~notification~~ a
5 notification of an event relating to an entity bean object in the container.
6 a representation setting instructor for instructing the second object storage
7 system to set up a copy of the entity bean object in the persistence manager in
8 response to the notification;
9 a change determination instructor for instructing the second object storage
10 system to determine object changes made to the entity bean object in the container
11 using the representation in the persistence manager; and
12 an integration instructor for instructing the second object storage system to
13 integrate the determined entity bean changes with the copy in the persistence
14 manager;
15 wherein the persistence manager connector integrates the determined
16 object changes into the second storage system; and
17 a consistency maintaining unit for maintaining consistency between the
18 copy of the entity bean object in the persistence manager and the entity bean
19 object in the container.

1 42. (Original) A persistence manager connector as in claim 41, wherein the
2 first object storage system is an Enterprise JavaBeans (EJB) container.

1 43. (Currently amended) Computer-readable media for storing instructions
2 or statements for use in the execution in a computer of a method for integrating
3 changes to an object in a first object storage system with a second object storage
4 system, the method comprising the steps of:

5 receiving from the first object storage system ~~notification~~ a notification of
6 an event relating to an object in the first object storage system;
7 setting up a representation of the object in the second object storage
8 system in response to the notification;

9 determining the changes made to the object in the first object storage
10 | system using the representation in the second object storage system; ~~and~~
11 | integrating the determined changes with the representation in the second storage
12 | system; and
13 | maintaining consistency between the representation in the second storage
14 | system and the object in the first storage system.

1 44. (Currently amended) A computer program product for use in the
2 | execution in a computer for integrating changes to an object in a first object
3 | storage system with a second object storage system, the method comprising the
4 | steps of:
5 | receiving from the first object storage system ~~notification~~ a notification of
6 | an event relating to an object in the first object storage system;
7 | setting up a representation of the object in the second object storage
8 | system in response to the notification;
9 | determining the changes made to the object in the first object storage
10 | system using the representation in the second object storage system; ~~and~~
11 | integrating the determined changes with the representation in the second
12 | storage system; and
13 | maintaining consistency between the representation in the second storage
14 | system and the object in the first storage system.

1 45. (Currently amended) A computer data signal embodied in a carrier
2 | wave and representing sequences of instructions which, when executed by a
3 | processor, cause the processor to integrate changes to an object in a first object
4 | storage system with a second object storage system, the method of comprising the
5 | steps of:

6 | receiving from the first object storage system ~~notification~~ a notification of
7 | an event relating to an object in the first object storage system;
8 | setting up a representation of the object in the second object storage
9 | system in response to the notification;
10 | determining the changes made to the object in the first object storage
11 | system using the representation in the second object storage system; and
12 | integrating the determined changes with the representation in the second storage
13 | system;
14 | wherein the computer data signal embodied in the carrier wave can be
15 | transferred via a network from storage to the processor; and
16 | maintaining consistency between the representation in the second storage
17 | system and the object in the first storage system.